

OPERATING SUMMARY

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WOOLWICH TWP.

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ELMIRA

WATER POLLUTION CONTROL PLANT

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C. Macfarlane

MANAGER, UTILITY OPERATIONS  
B. Hansler

WOOLWICH TWP.

ELMIRA

WATER POLLUTION CONTROL PLANT

operated for

THE TOWNSHIP OF WOOLWICH

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

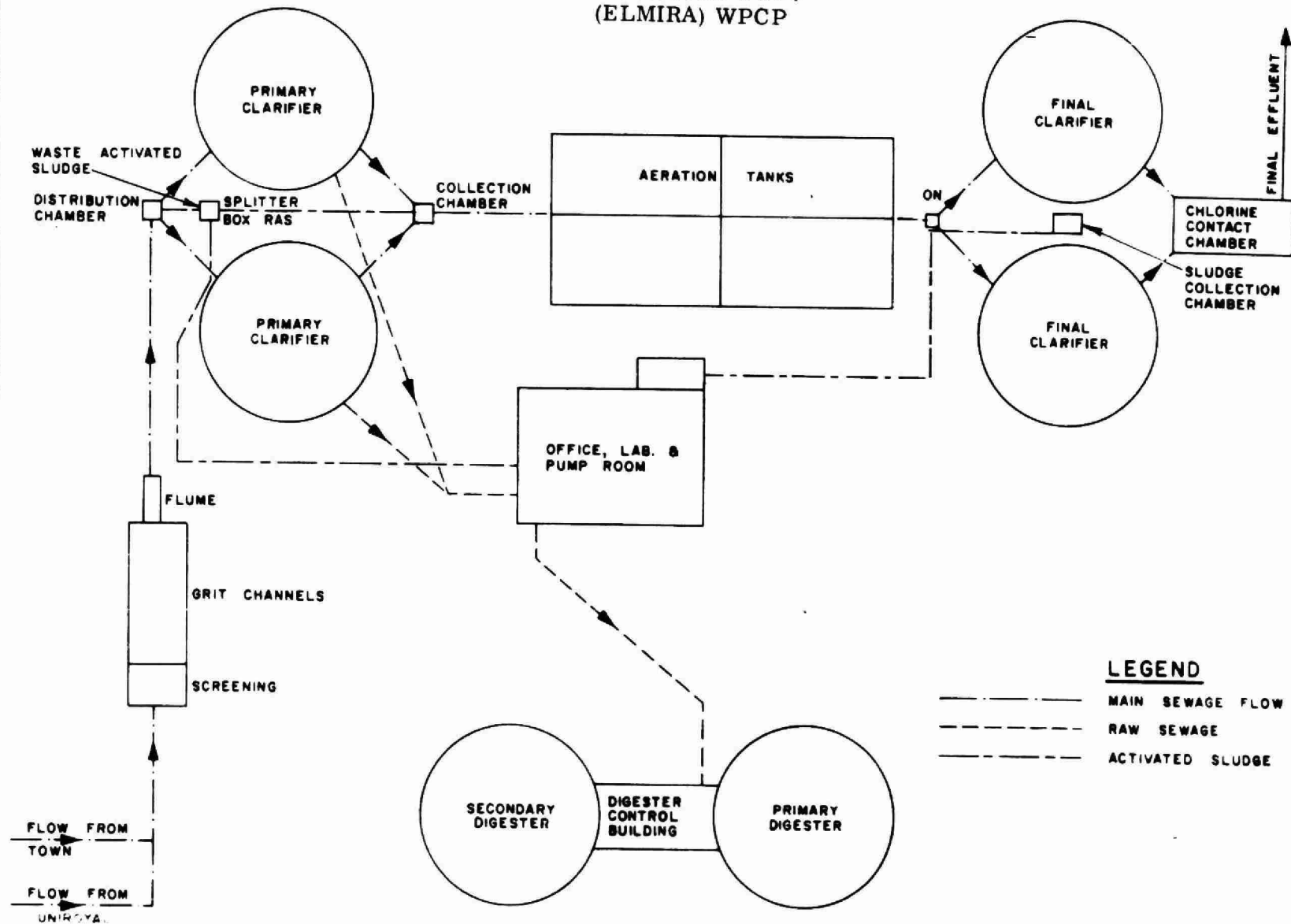
T. Cross, Director

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WOOLWICH TWP.  
(ELMIRA) WPCP



# DESIGN DATA

PROJECT Woolwich Twp.  
(Elmira) WPCP

PROJECT NO. 2-0096-61

## DESIGN FLOW

Municipal 0.50 mgd  
Industrial 0.18 mgd

Total 0.68 mgd

DESIGN POPULATION 5,000

## BOD -

Municipal 170 mg/l  
Industrial 1100 mg/l

Combined 420 mg/l

## SS -

Municipal 300 mg/l  
Industrial 320 mg/l

Combined 306 mg/l

## PRÉTREATMENT -- INDUSTRIAL WASTES

Type --  
Balancing tank plus  
neutralization facilities

## PRIMARY TREATMENT

### Screening

One coarse manually-cleaned bar screen

### Grit Removal

Type: Grit channels, manually cleaned

### Primary Sedimentation

Type: Link Belt  
Size: Two 40' dia x 8' swd (125,000 gal)  
Retention: 4.42 hours  
Loading: Surface, 270 gal/ft<sup>2</sup>/day  
Weir, 2,700 gal/ft/day

## SECONDARY TREATMENT

### Aeration Tanks

Type: Mechanical aeration  
Size: Four 30' x 30' x 14.2' (48,00 cu ft  
or 300,000 gal)  
Retention: 10.6 hours

### Aerators

Type: Four Ames-Crosta

## Secondary Sedimentation

Type: Rex Chainbelt  
Size: Two 45' dia x 7' swd (22,300  
cu ft or 139,000 gal)  
Retention: 4.9 hours  
Loading: Surface, 214 gal/ft<sup>2</sup>/day  
Weir, 2,400 gal/ft/day

## CHLORINATION

Type: F & P

### Chlorine Contact Chamber

Size: Two 30' x 6' x 4.74' (1,700 cu ft  
or 10,600 gal)  
Retention: 22.5 min

## OUTFALL

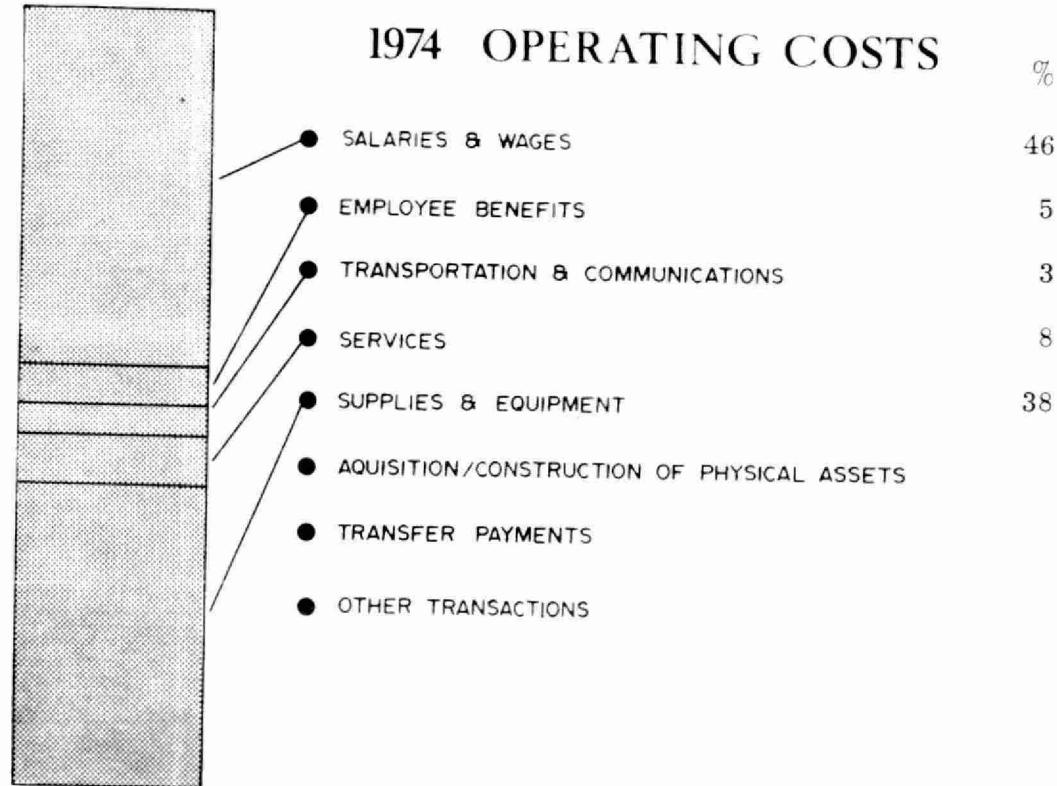
- to Canangagique Creek

## SLUDGE HANDLING

### Digestion System

Type: Two-stage digestion  
Primary - One 30' dia tank with two  
Dorr mixers (97,100 gal)  
Secondary - One 30' dia tank (15,200  
cu ft or 94,700 gal)

# ANNUAL COSTS



**YEARLY OPERATING COSTS**

YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			\$/M.G.	¢/lb BOD
1969	194	41,145	212	6
1970	201	38,968	94	7
1971	160	30,274	189	11
1972	185	33,178	179	10
1973	184	32,210	175	10
1974	186	49,149	263	15

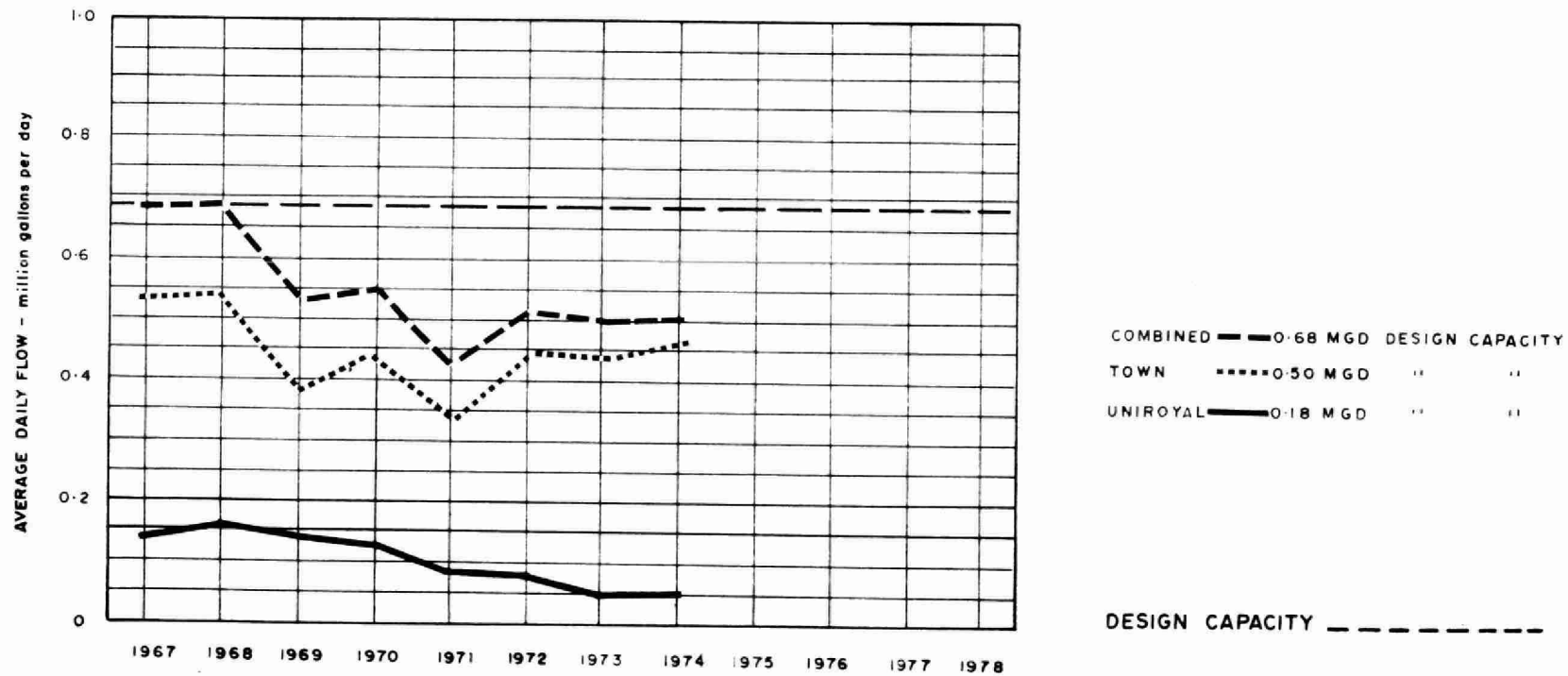
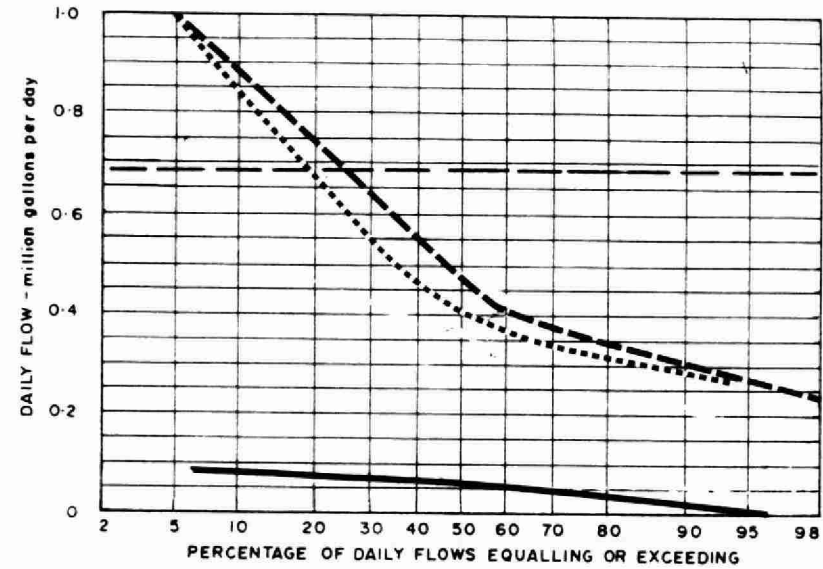


# OPERATING EXPENDITURES

Regular Staff	\$ 22,293	\$
Casual (Unclassified) Staff	509	
TOTAL SALARIES AND WAGES		22,802
TOTAL EMPLOYEE BENEFITS		2,490
TOTAL TRANSPORTATION AND COMMUNICATIONS		1,396
Insurance	1,185	
Sludge Haulage	2,250	
Repairs and Maintenance	190	
Other Services	179	
TOTAL SERVICES		3,804
Machinery and Equipment	8,110	
Chemicals	2,776	
Utilities	6,299	
Other Supplies and Equipment	1,472	
TOTAL SUPPLIES AND EQUIPMENT		18,657
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		-
TOTAL TRANSFER PAYMENTS		-
OTHER TRANSACTIONS		-
GRAND TOTAL	GRAND TOTAL	\$ 49,149

# PROCESS DATA

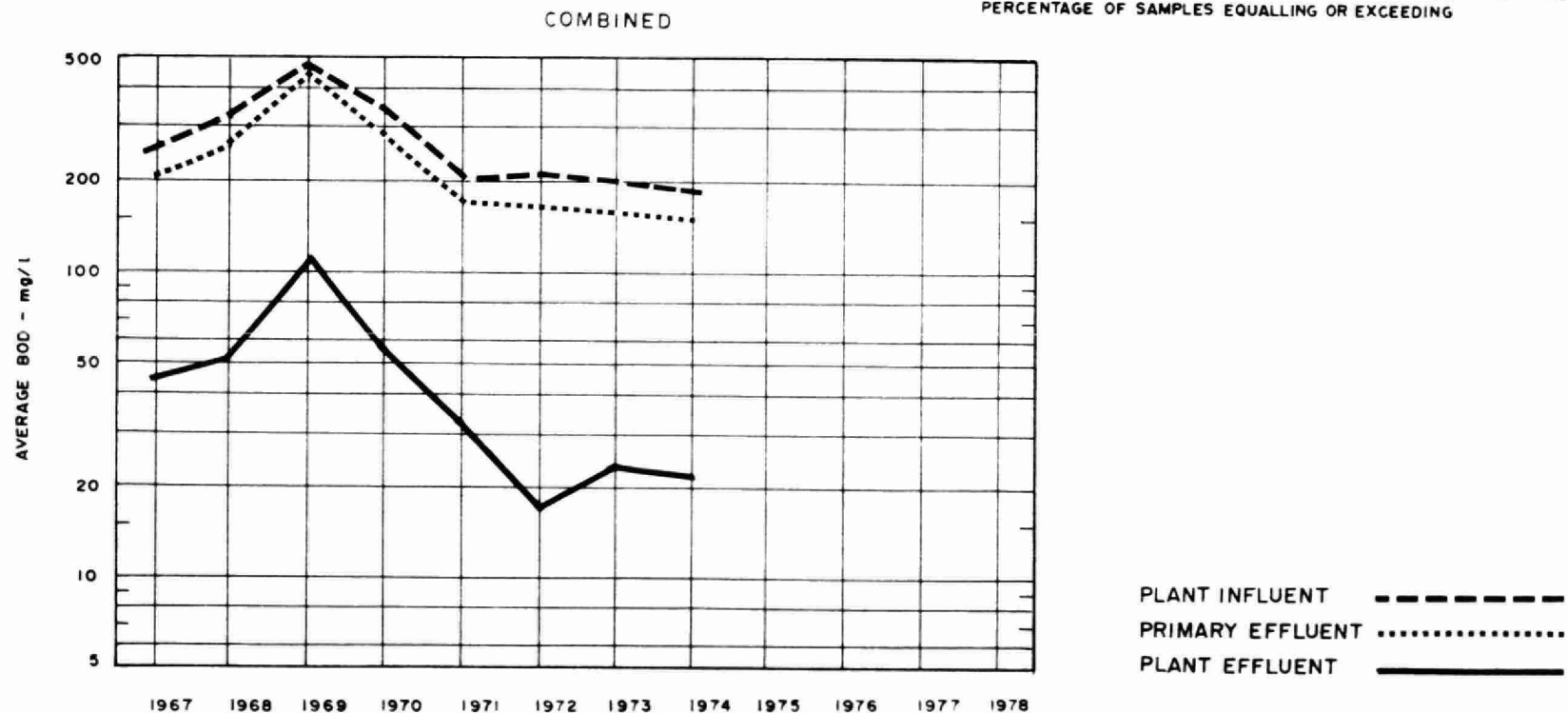
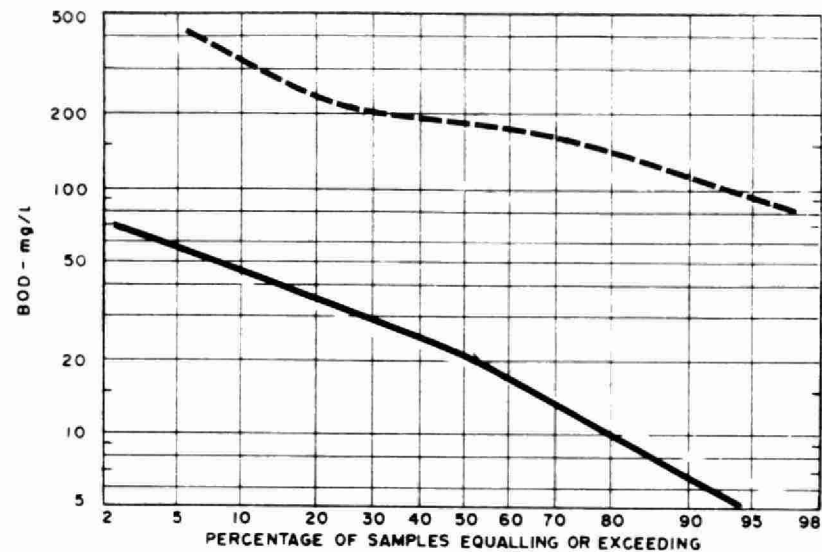
## FLOWS



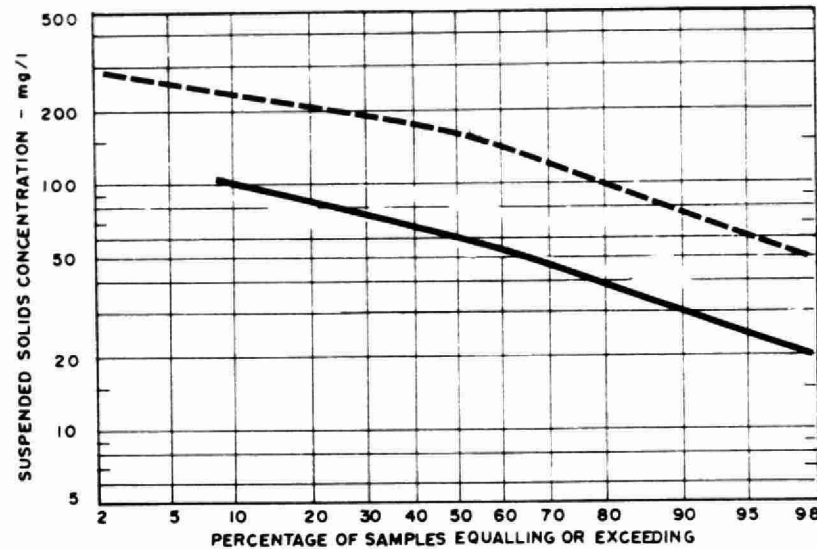
## PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l P	mg/l P
JAN	19.60	.63	1.43	208	33	84	34	161	61	62	20	5.8	3.5
FEB	17.71	.63	1.12	284	38	87	44	118	68	42	9	5.0	2.9
MAR	23.10	.75	1.63	165	35	79	29	110	85	23	6	6.9	2.8
APR	23.48	.78	1.40	170	21	88	35	130	62	52	16	5.4	1.9
MAY	24.24	.78	1.72	132	23	83	26	115	72	37	10	4.0	2.1
JUNE	12.96	.43	0.63	91	10	89	10	121	35	71	11	9.1	2.0
JULY	10.19	.33	0.41	175	9	95	17	170	30	82	14	5.2	3.3
AUG	8.84	.28	0.35	125	8	94	10	173	25	86	13	20.0	1.9
SEPT	9.57	.32	0.45	165	16	90	14	185	22	88	16	7.2	1.9
OCT	11.16	.36	0.45	175	20	89	17	182	48	74	15	8.1	3.0
NOV	13.62	.45	0.93	304	26	91	38	159	69	57	12	7.0	2.8
DEC	12.17	.39	0.39	315	25	92	35	152	75	51	9	12.7	2.1
TOTAL	186.64	-	-	-	-	-	317	-	-	-	172	-	-
AVG.		.51	MAXIMUM 1.72	193	23	88	26	147	55	63	14	6.9	2.6
No. of Samples	-	-	-	49	52	-	-	49	52	-	-	43	50

# BIOCHEMICAL OXYGEN DEMAND

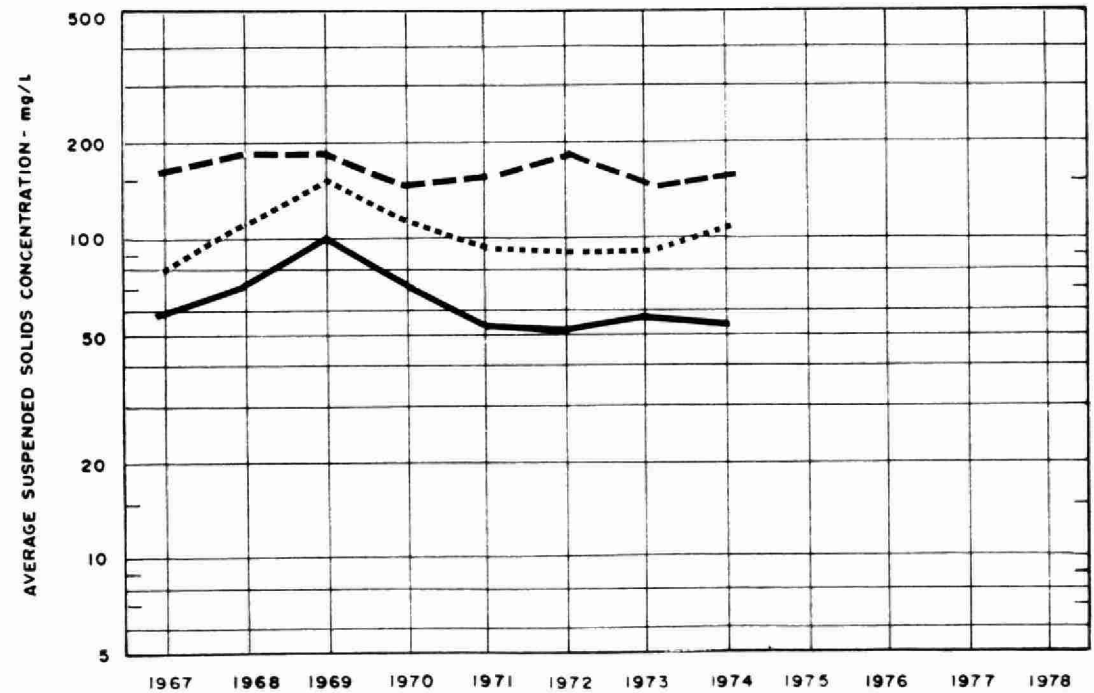


# SUSPENDED SOLIDS



COMBINED

PLANT INFLUENT      - - - - -  
 PRIMARY EFFLUENT      . . . . .  
 PLANT EFFLUENT      ———

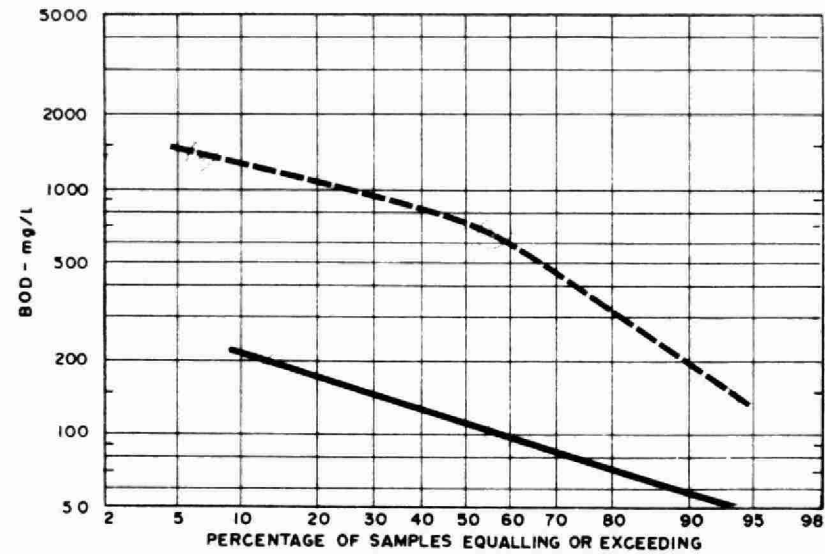


## SAMPLING SUMMARY

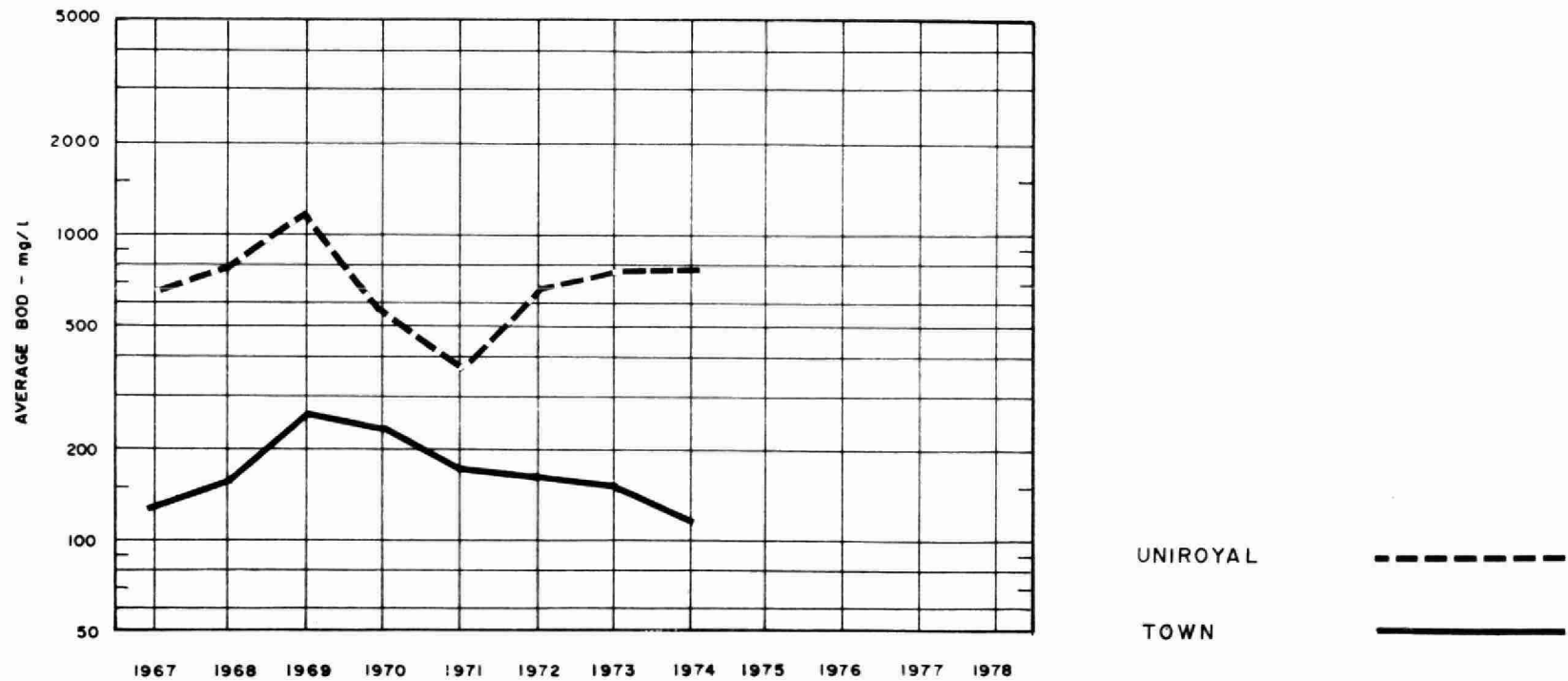
WEEK ENDING	TOWN OF ELMIRA			UNIROYAL			COMBINED			EFFLUENT	
	TOTAL FLOW mil gal	BOD mg/L	SUSPENDED SOLIDS mg/l	TOTAL FLOW mil gal	BOD mg/l	SUSPENDED SOLIDS mg/l	TOTAL FLOW mil gal	BOD mg/l	SUSPENDED SOLIDS mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l
Jan. 5	2.33	95	140	.34	200	70	2.67	130	115	24	75
12	2.84	160	180	.41	650	120	3.25	280	350	40	70
		170	100		850	100		240	150	60	100
19	2.67	120	160	.40	1100	80	3.07	280	140	38	50
		190	150		1200	50		240	170	30	60
26	4.30	80	110	.41	900	70	4.71	140	110	24	50
		70	110		950	200		190	180	28	50
		60	80		1200	40		160	70	20	30
Feb. 2	7.58	30	70	.41	1000	140	7.99	80	120	17	60
9	4.39	140	75	.41	1400	120	4.80	220	100	28	60
16	2.82	280	110	.44	1800	200	3.26	650	120	38	60
		80	80		1000	100		170	90	22	70
23	3.83	200	230	.43	2200	80	4.26	300	160	85	90
Mar. 2	4.21	80	170	.41	1300	60	4.62	180	150	42	50
9	7.83	44	70	.31			8.14				
16	4.67	70	115	.43	800	180	5.10	180	100	17	30
23	3.38	85	90	.50	800	400	3.88	140	150	32	120
30	3.01	60	75	.52	1100	100	3.53	160	40	50	140
Apr. 6	6.13	44	50	1.04	1000	160	7.17	120	80	10	40
13	5.23	70	50	.42	1000	100	5.65	170	90	30	60
20	4.63	80	100	.50	1100	100	5.13	240	200	19	80
27	4.35	55	120	.52	800	125	4.87	150	150	28	70
May 4	3.61	80	125	.52	750	90	4.13	160	140	18	100
11	4.26	80	200	.51	650	70	4.77	110	150	40	70
18	7.69	60	260	.46	700	60	8.15	110	50	11	50
25	5.28	80	110	.52	600	100	5.80	150	120	22	70
June 1	3.17	75	75	.47	440	160	3.64	95	90	9	50
8	2.62			.38	150	80	3.00				
15	2.51	100	140	.34			2.85	75	100	14	50
22	3.18	70	125	.29	210	100	3.47	75	125	6	20
29	2.58	170	125	.24	340	300	2.82	120	170	9	20

July 6	2.36	150	155	.21	240	90	2.57	170	170	10	30
13	2.30	140	120	.22	130	110	2.52			6	30
20	2.26	60	80				2.26			14	40
27	2.08	260	540				2.08	180	170	4	20
Aug. 3	1.99						1.99	130	180	9	30
10	1.87						1.87	190	210	4	20
17	2.10						2.10	95	175	12	15
24	2.02						2.02	110	130	13	40
31	1.98						1.98	100	170	4	20
Sept. 7	1.92	240	250		140	120	1.92			14	20
14	1.97	100	160	.05	100	75	2.02	170	220	24	20
21	2.14			.09			2.23				
28	2.57	150	160	.15	420	120	2.72	160	150	10	25
Oct. 5	2.25	260	230	.21	360	180	2.46	160	180	16	30
12	2.09	160	225	.34	380	200	2.43	180	230	22	60
19	2.21	140	150	.39	500	200	2.60	160	120	28	50
26	2.10	140	175	.40	500	150	2.50	200	200	14	50
Nov. 2	2.19	180	200	.40	700	200	2.59	220	160	24	70
9	2.42	110	170	.40	500	180	2.82	190	180	14	60
16	2.70	120	140	.40	850	160	3.10	200	160	55	100
23	3.29	240	100	.43	300	80	3.72	160	70	18	40
30	2.80	150	195	.44	1100	375	3.24	750	225	20	75
Dec. 7	2.33	110	190	.44	900	420	2.77	280	185	26	70
14	2.42			.46			2.88				
21	2.39	110	160	.47	1200	1480	2.86	350	120	24	80
28	2.08			.46			2.54				
31	0.92			.20			1.12				
TOTAL	168.85			17.79			186.64				
AVG.	.46	121	146	.05	781	172	.51	193	147	23	55
No. of Samples		48	48		44	44		49	49	52	52

# BIOCHEMICAL OXYGEN DEMAND



UNIROYAL AND TOWN



UNIROYAL

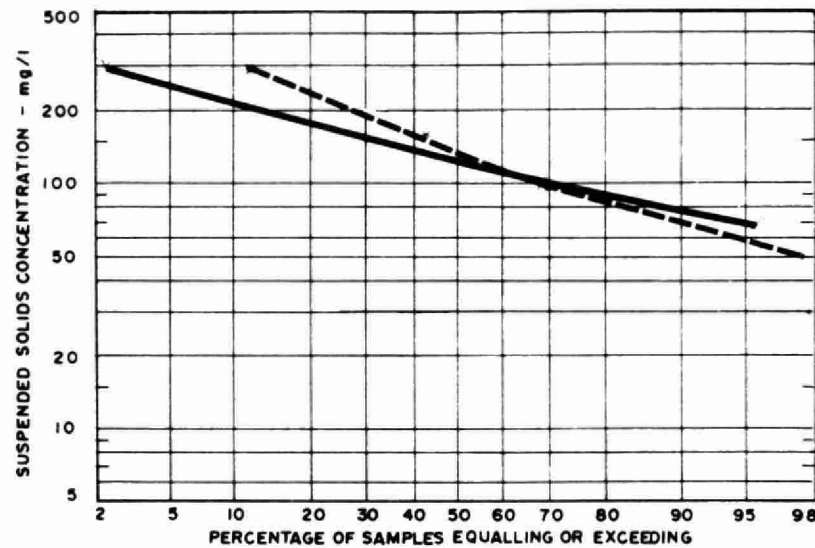
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TOWN

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# SUSPENDED SOLIDS



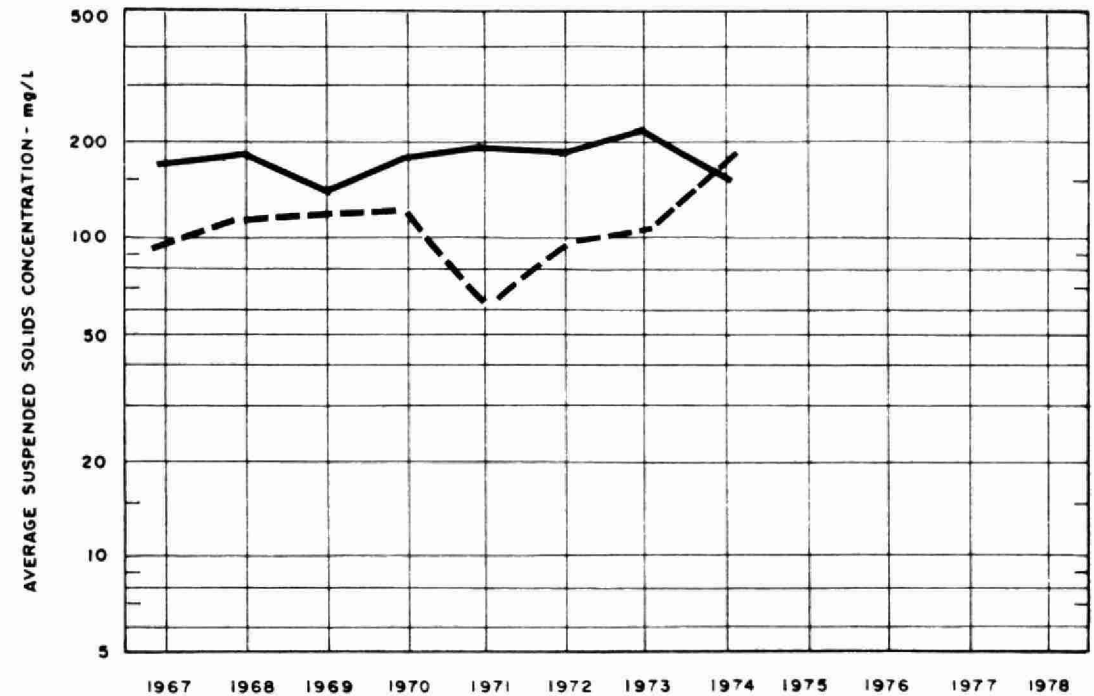
UNIROYAL AND TOWN

UNIROYAL

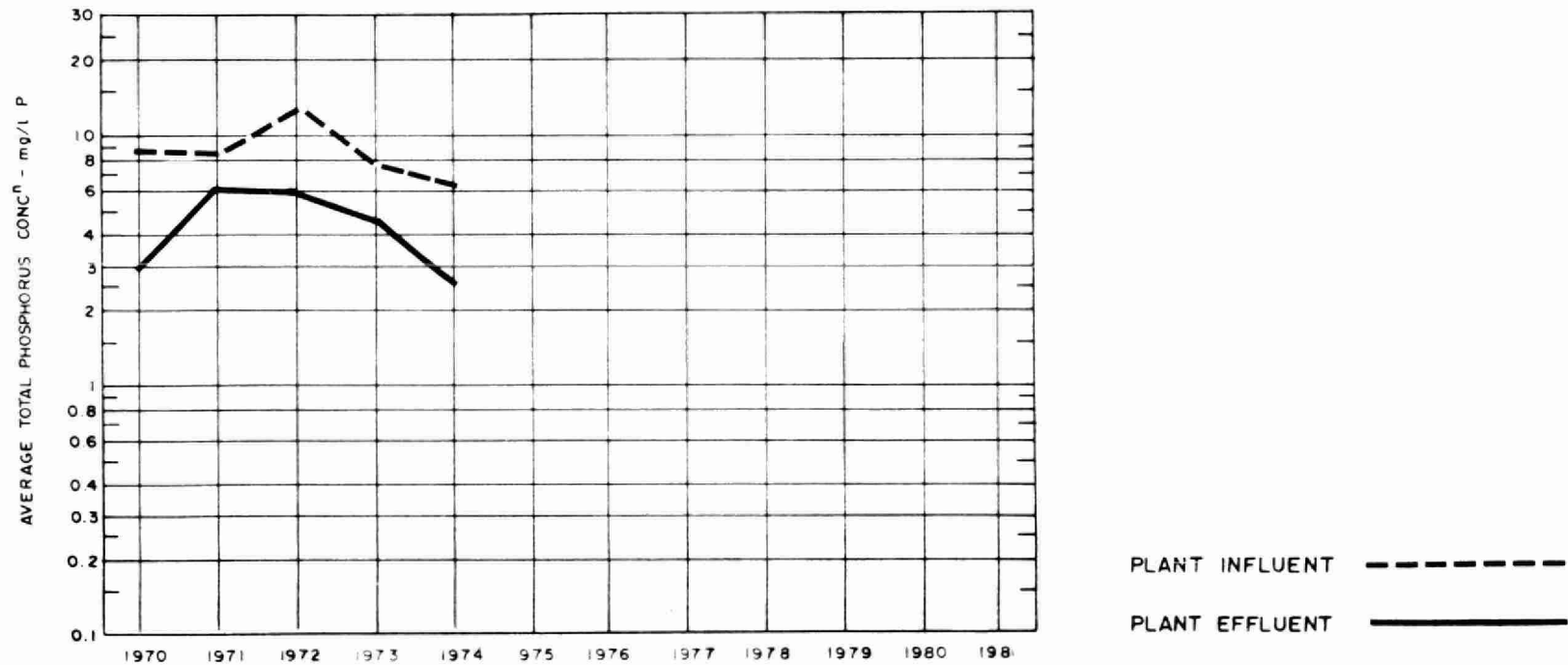
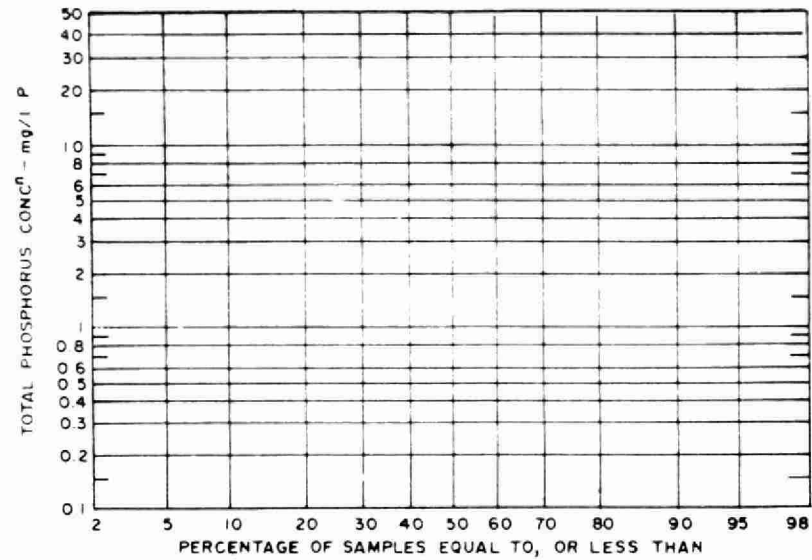
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TOWN

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# PHOSPHORUS



## TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL <sub>2</sub> USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day <sup>-1</sup>	AIR 1000 ft <sup>3</sup> lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	22	289	1.5	193	87	7600	.05		42.3	8.9	75					251
FEB	28	328	1.9	210	103	7800	.06		12.8							76
MAR	40	340	1.5	134	82	7000	.05		52.7	9.3	67					313
APR	32	291	1.2	121	93	6400	.04		35.0							208
MAY	37	292	1.2	93	81	7300	.03		64.8							385
JUNE	24	302	2.3	140	153	6700	.03		101.1							600
JULY	28	305	3.0	140	95	7900	.02		131.6							781
AUG	26	263	3.0	97	84	5900	.02		113.1							671
SEPT	26	285	3.0	220	105	5700	.04		134.0							795
OCT	28	315	2.8	148	124	6500	.03		152.0							902
NOV	26	340	2.5	190	152	5800	.05		184.8							1097
DEC	25	285	2.3	245	140	8200	.04		136.0							807
TOTAL	342	3635	-	-	-	-	-	-	1160.2	-	-		-	-	-	6886
AVG.	1.8 cu. ft/mil gal	303	1.9	160	106	6900	.04		96.7	9.1	71					574

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